

Mark 95 Series

Sanitary Back Pressure Regulators

The Mark 95 is available with a hard or soft seat and a variety of diaphragm and o-ring materials, making the valve well-suited for virtually any sterile back pressure application.

The Mark95 operates by sensing the inlet pressure, or back pressure, beneath the diaphragm, as flow enters from inlet port on the side. As the back pressure exceeds the setpoint, the diaphragm force compresses the range spring permitting the stem to move from the seat toward the open position. As the flow increases, the back pressure is relieved and the spring and diaphragm relax, allowing the stem to return to the normally closed position. If a different set point is desired, a simple turn of the adjusting screw will increase or decrease the setting to any set point within the range covered by the regulator's spring.

FEATURES

- **New!** Optional integral gauge port
- CRN Registration Number Available
- Soft seat capability for ANSI Class VI shutoff
- No guiding surfaces in the fluid – prevents particulate generation
- 100% 316L barstock body and trim
- Self-draining
- No threads to disassemble for cleaning
- Clean-in-Place, Steam-in-Place – dome features spring arrangement to allow CIP/SIP
- Remote setpoint capability
- Lifetime warranty on Jorlon diaphragm

DOCUMENTATION

The following documentation is shipped with each order:

- Steriflow Unicert
 - Traceable Material Heat Number for body and ferrules
 - Certificate of Compliance to FDA and USP Class VI

Certificate of Surface Finish

- Final Test Reports and Certificate of Origin available upon request at time of order



AVAILABLE FINISHES (MK95/MK95FT)

Body

- Standard: 20 Ra μm (0,5 Ra μm) (ASME BPE SF5) mechanical finish and electropolish on inside wetted surfaces; machine finish and electropolish on exterior.
- Optional: 20 Ra μm (0,5 Ra μm) SF5 mechanical finish and electropolish on external surfaces; 8 Ra μm (0,2 Ra μm) finish on internal or external finishes and electropolish (Better than SF4)

Spring Housing and Handle

- Standard: machine finished 316SST, electropolished
- Optional: 20 Ra μm (0,5 Ra μm) mechanical finish and electropolish on external surfaces (SF5). 8 Ra μm (0,2 Ra μm) finish on external surfaces on all sizes and electropolish. (Better than SF4)

Adjusting Screw

- Standard: 32Ra μm electropolished (Note: adjusting screw is a threaded part)
- Optional: 20 Ra μm (0,5 Ra μm) mechanical finish and electropolish finish (SF5)

SPECIFICATIONS – O-RING DIAPHRAGM

Sizes: 1/2" (DN15), 3/4" (DN20), 1" (DN25), 1-1/2" (DN40), 2" (DN50), 3" (DN80)

End Connections

- Quick disconnect fittings (to match Tri-Clamp® fitting)
- DIN/ISO sanitary connections

Body & Trim Materials: 316L Stainless Steel (ASTM A47, S31603)

Seat Materials

- Standard hard seat – integral 316L SST seat
- Optional soft seat (for Cv 1.5, 1" size and above)
 - Jorlon (FDA & USP Class VI) for steam and hot fluid service to 338°F (170°C)
 - PEEK (FDA & USP Class VI) for steam and hot fluid service to 350° (177°C)
 - PTFE to +252°F (122°C) continuous or 275°F (135°C) intermittent [not to exceed 15 min. in a one hour period] FDA, USP Class VI

Note: consult factory for 1/2" & 3/4" soft seat materials

Spring Housing Materials

- CF8M cast SST (1/2" – 1-1/2")
- Fabricated 316L SST (2" – 3")

Diaphragm Materials

- 316L SST
- EPDM/Nylon (to 275°F, 135°C), FDA only
- Jorlon (to 400°F, 204°C), FDA, USP Class VI
- Ultra-thin Jorlon (to 400°F, 204°C), FDA, USP Class VI (for use with 3-8 range spring only)

O-Ring Materials

- EPDM (to 275°F, 135°C) - FDA, USP Class VI
- Buna-N (to 225°F, 107°C) - FDA
- Viton (to 400°F, 204°C) - FDA, USP Class VI
- Silicone (to 400°F, 204°C) - FDA, USP Class VI
- Teflon-Encapsulated Viton (to 400°F, 204°C) - FDA, USP Class VI)
- Teflon-Encapsulated Silicone (to 400°F, 204°C) - FDA, USP VI*. This o-ring material was limited to certain sizes on older Mark 95's. If a replacement is needed, give us the original serial number.

* For use on new valve size 1-1/2" - 3" only. Can be sold as part of a complete stem/diaphragm/o-ring repair kit on Cv>4.5 only

Shutoff: ANSI Class III hard seat or Class VI soft seat

Body Pressure Temperature Rating: (dependent upon construction)

| Valve Size | PSIG @ 100°F | PSIG @ 450°F |
|------------------|----------------|----------------|
| 1/2", 3/4" & 1" | 350 (24,1 bar) | 250 (17,2 bar) |
| 1-1/2" , 2" & 3" | 200 (13,8 bar) | 200 (13,8 bar) |

Pressure on 1/2", 3/4" & 1" size limited to 225 psig (15,5 bar) @ 100°F and 200 psig (13,8 bar) @ 400°F if using Ultra-thin Jorlon diaphragm.

Set Point Spring Ranges

| Valve Size | Set Point Ranges, PSI (bar) |
|-----------------|--|
| 1/2", 3/4" & 1" | 3-8* (0,2-0,5), 5-30 (0,3-2,1), 15-50 (1,0-3,4), or 35-90 (2,4-6,2) |
| 1-1/2" | 3-25* (0,2-1,7), 10-25 (0,7-1,7), 15-40 (1,0-2,8) or 35-85 (2,4-5,9) |
| 2" | 5-25* (0,3-1,7), 10-25 (0,7-1,7) or 15-60 (1,0-4,1) |
| 3" | 15-25 (1,0-1,7) or 15-60 (1,0-4,1) |

* Range available with elastomer or Ultra-thin Jorlon diaphragm only. Maximum pressure drop 40 psi.

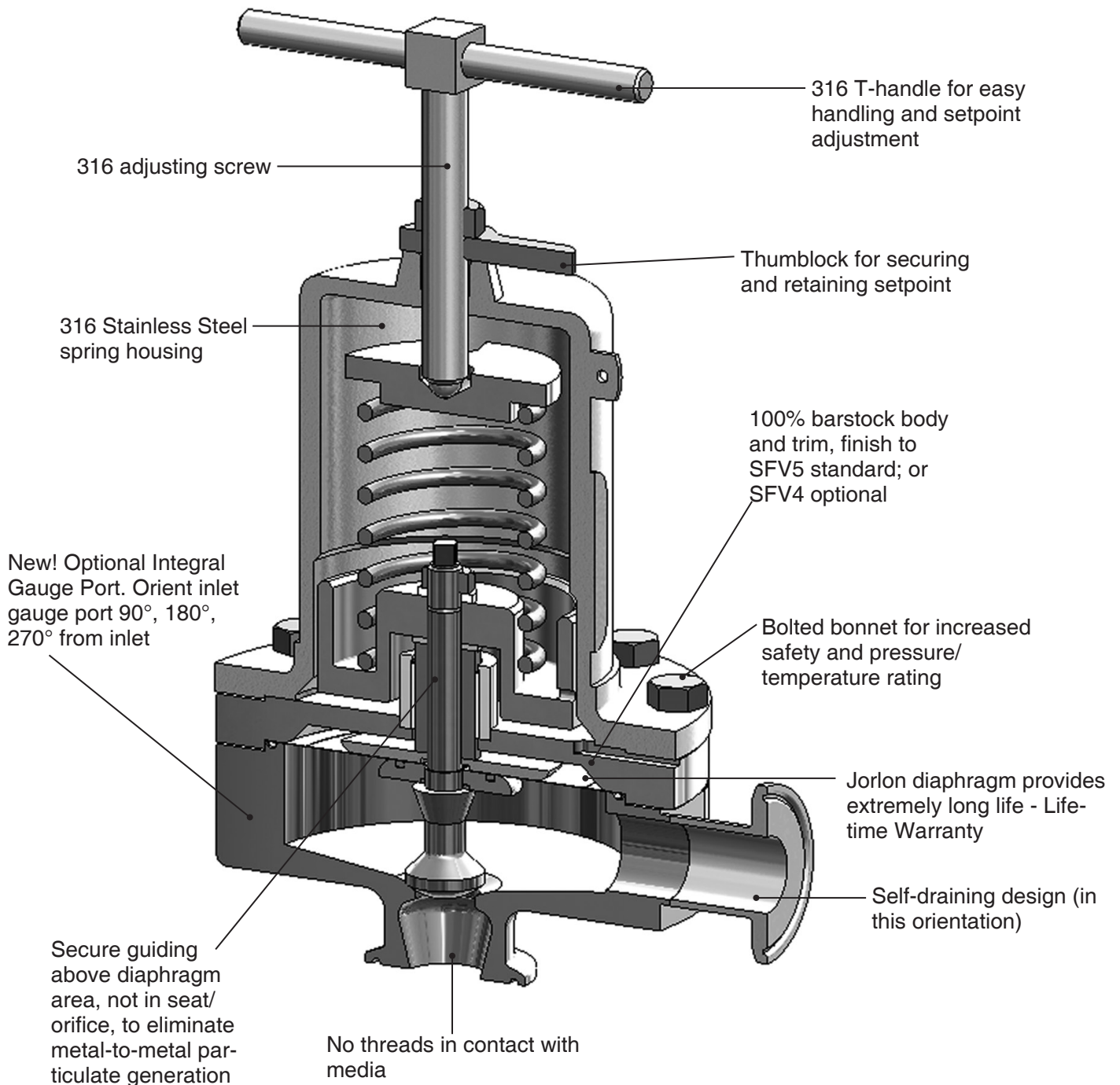
Cv (Kv) Ratings:

| Valve Size | Metal Diaphragms Cvs (Kvs) | Elastomer Diaphragm Cvs (Kvs) |
|---------------|-----------------------------------|-----------------------------------|
| 1/2", 3/4"*** | 0.5 (04,), 1.5 (1,3) | 0.5 (04,), 1.5 (1,3) |
| 1"*** | 1.5 (1,3), 3.0 (2,6) or 4.5 (3,9) | 1.5 (1,3), 3.0 (2,6) or 5.5 (4,7) |
| 1-1/2" | 4.5 (3,9) or 10.0 (8,6) | 4.5 (3,9) or 10.0 (8,6) |
| 2" | 10.0 (8,6) or 19.0 (16,3) | 10.0 (8,6) or 19.0 (16,3) |
| 3" | 10.0 (8,6) or 28.0 (24,1) | 10.0 (8,6) or 28.0 (24,1) |

** Cv's limited when using the 3-8 range spring. See rules in sizing program.

Maximum Allowable Pressure Differential: 200 psi (3-8 spring range has a max of 40 psi)

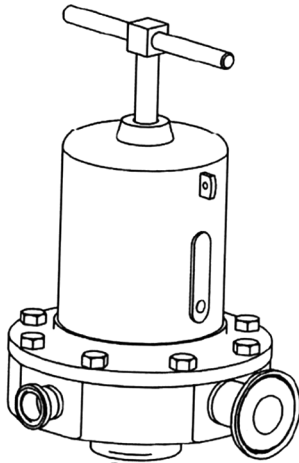
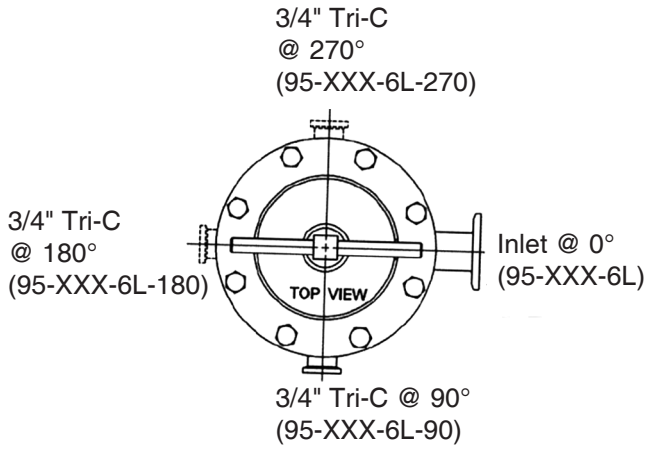
FEATURES & BENEFITS



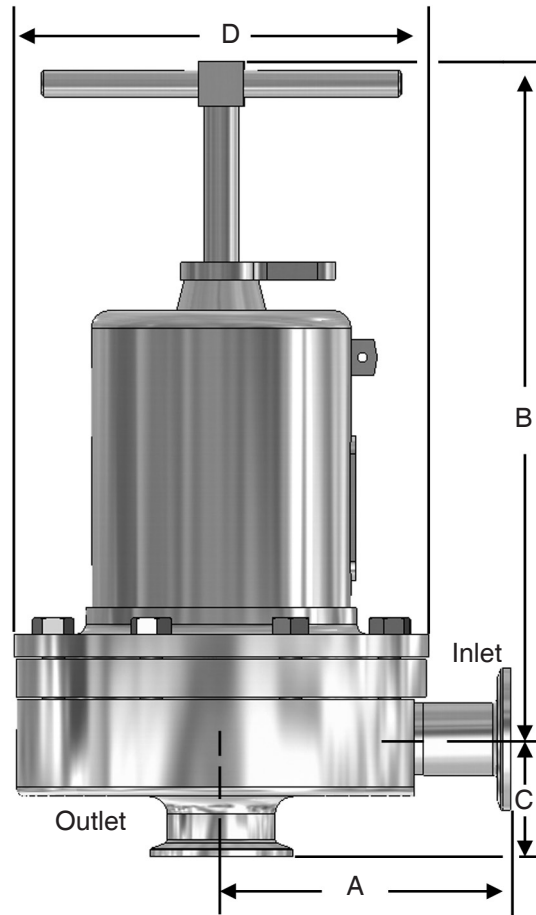
APPLICATIONS

The MK95 is suitable for a variety of process and clean utility applications in the biopharmaceutical, semi-conductor, and food & beverage industries including: continuous circuit WFI pump deadhead diversion, bioreactor agitator seal pressure maintenance, large volume fill back pressure release, and zero dead leg pressure relief.

DIMENSIONS



Example: (95-XXX-6L-90)



| Valve Size | Dimensions (inches) | | | | Weight Lbs |
|------------|---------------------|-------|------|------|------------|
| | A | B | C | D | |
| 1/2" | 3.29 | 8.00 | 1.37 | 5.70 | 18 |
| 3/4" | 3.29 | 8.00 | 1.50 | 5.70 | 18 |
| 1" | 4.00 | 8.00 | 1.64 | 5.70 | 20 |
| 1-1/2" | 4.21 | 10.50 | 2.53 | 7.25 | 40 |
| 2" | 5.34 | 17.50 | 2.96 | 9.50 | 90 |
| 3" | 5.34 | 18.00 | 3.46 | 9.50 | 98 |

| Valve Size | Dimensions (mm) | | | | Weight Kgs |
|------------|-----------------|-----|----|-----|------------|
| | A | B | C | D | |
| DN15 | 84 | 203 | 35 | 145 | 8,1 |
| DN20 | 84 | 203 | 38 | 145 | 8,1 |
| DN25 | 102 | 203 | 42 | 145 | 9,1 |
| DN40 | 107 | 267 | 64 | 184 | 18 |
| DN50 | 136 | 445 | 75 | 241 | 41 |
| DN80 | 136 | 457 | 88 | 241 | 44,4 |

Based on US tri-clamp ends. Consult factory for DIN and ISO tri-clamp end dimensions

SAMPLE SPECIFICATION

Stainless steel sanitary back pressure regulator body and wetted components shall be made from 316L, ASTM A479, S31603 barstock material. Regulator shall be activated by FDA approved, USP Class VI certified Jorlon diaphragm with lifetime guarantee. All guiding of valve stem/plug shall be outside of the wetted, process areas, above diaphragm. Regulator shall be free of threads within wetted, process areas of valve internal and shall be self draining when installed with outlet vertical and below valve assembly.

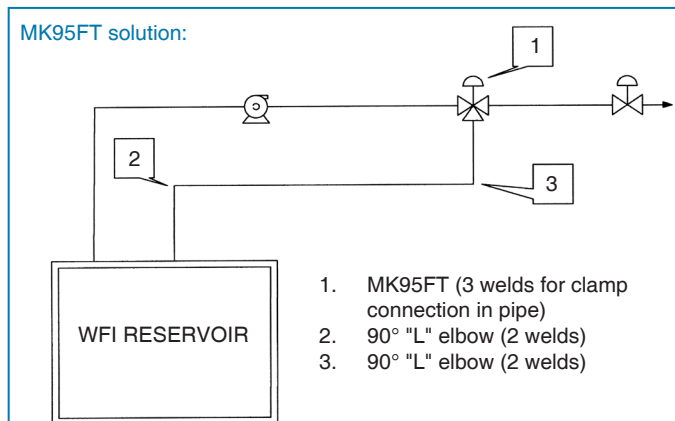
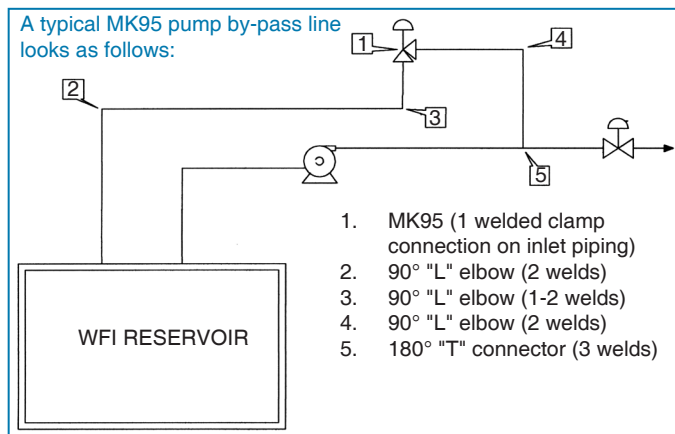
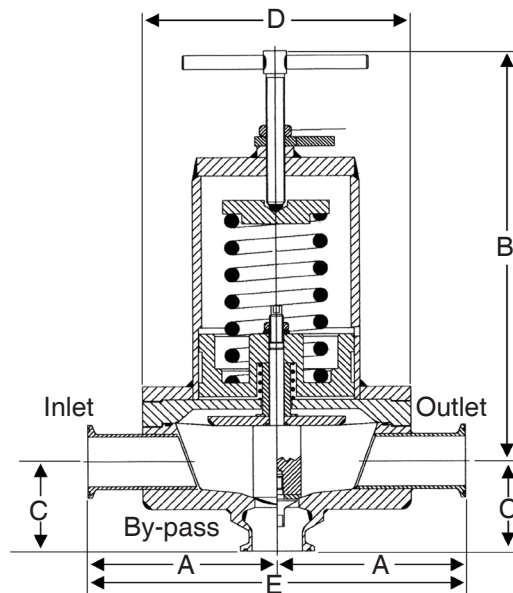
Mark 95FT Series

CRN Registration Number Available

Sanitary "Flow Through" Back Pressure Regulators

Starting with the features and benefits associated with the superior design of the Mark 95, Steriflow Valve has added a flow-through option that creates more application potential. The MK95FT can eliminate a portion of the by-pass line components by allowing the back pressure regulating valve to be installed in the primary line – not in the separated by-pass line.

The Mark 95FT is often found in liquid services such as WFI loops, CIP lines and filling lines. The valve is normally closed, allowing flow to pass straight through to downstream users. When demand downstream is reduced and pressure builds and reaches the setpoint, the Mark 95FT will open to relieve and maintain constant pressure. This design allows for elimination of pipe "T's" and elbows, reduction of weld joints, simplified by-pass piping and easier, quicker installation. Due to the unobstructed flow path through the valve, very little to no pressure loss through the valve can be expected. This is a key reason the MK95FT can be installed directly into the primary process piping.



| Valve Size | Dimensions (inches) | | | | | Weight Lbs |
|------------|---------------------|------|------|------|------|------------|
| | A | B | C | D | E | |
| 3/4" | 3.29 | 8.50 | 1.50 | 5.70 | 6.58 | 19 |
| 1" | 4.00 | 8.50 | 1.64 | 5.70 | 8.00 | 21 |
| 1-1/2" | 4.24 | 10.5 | 2.53 | 7.25 | 8.48 | 41 |
| 2" | 5.34 | 17.5 | 2.96 | 9.50 | 10.7 | 91 |
| 3" | 5.34 | 18.0 | 3.46 | 9.50 | 10.7 | 99 |

| Valve Size | Dimensions (mm) | | | | | Weight Kgs |
|------------|-----------------|-----|----|-----|-----|------------|
| | A | B | C | D | E | |
| DN20 | 84 | 216 | 38 | 145 | 168 | 8,6 |
| DN25 | 102 | 216 | 42 | 145 | 203 | 9,5 |
| DN40 | 108 | 267 | 64 | 184 | 214 | 19 |
| DN50 | 136 | 445 | 75 | 241 | 271 | 41 |
| DN80 | 136 | 457 | 88 | 241 | 271 | 45 |

Based on US tri-clamp ends. Consult factory for DIN and ISO tri-clamp end dimensions

ORDERING SCHEMATIC

| | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|-------|-------|-------|-------|--------|---------|---------|
| | | | | | | | 1 & 2 | 3 & 4 | 5 & 6 | 7 & 8 | 9 & 10 | 11 & 12 | 13 & 14 |
|--|--|--|--|--|--|--|-------|-------|-------|-------|--------|---------|---------|

| Model | |
|-------|--------------|
| 95 | Standard |
| 95FT | Flow-Through |

| Size | |
|------|---------------|
| 050 | 1/2" (DN15) |
| 075 | 3/4" (DN20) |
| 100 | 1" (DN25) |
| 150 | 1-1/2" (DN40) |
| 200 | 2" (DN50) |
| 300 | 3" (DN80) |

| Body Material | |
|---------------|------|
| 6L | 316L |

| Body Configuration | |
|--------------------|-------------------------------|
| | Leave blank for standard |
| 90 | 3/4" Tri-Clamp F/Gauge @ 90° |
| 180 | 3/4" Tri-Clamp F/Gauge @ 180° |
| 270 | 3/4" Tri-Clamp F/Gauge @ 270° |

| 1 & 2 | | Body | |
|-------|------------------------------------|------|-----------------------|
| | Finish | | Cvs (Kvs) |
| A | 20Ra Interior/63rms Exterior (Std) | A | 0.5 & 1.5 (0,5 & 1,3) |
| B | 20Ra Interior/20Ra Exterior | G | 3.0 (2,6) |
| C | 8Ra Interior/63rms Exterior* | H | 4.5 (3,9) |
| D | 20Ra Interior/8Ra Exterior | K | 5.5 (4,7) |
| E | 8Ra Interior/8Ra Exterior* | M | 10.0 (8,6) |
| F | 8Ra Interior/20Ra Exterior* | N | 19.0 (16,3) |
| | | P | 28.0 (24,1) |

* Handle and all external surfaces meet spec per above. The adjusting screw is a threaded part and cannot be polished beyond 20Ra
 Note: These valves are all tri-clamp end connections. Consult factory for other options.

| 3 | | Trim Finish | |
|---|--|-------------|-----------------|
| A | | | 20Ra (Standard) |
| B | | | 8Ra |

| 4 | | | | Trim – Cv (Kv) & Seat | | | |
|---|-----------|-------------|---|-----------------------|-------------|--|--|
| 5 | 0.5 (0,4) | Hard Seat | N | 5.5 (4,7) | Jorlon Seat | | |
| A | 1.5 (1,3) | Hard Seat | P | 10 (8,6) | Hard Seat | | |
| E | 3.0 (2,6) | Hard Seat | Q | 10 (8,6) | Teflon Seat | | |
| F | 3.0 (2,6) | Teflon Seat | R | 10 (8,6) | Jorlon Seat | | |
| G | 3.0 (2,6) | Jorlon Seat | S | 19 (16,3) | Hard Seat | | |
| H | 4.5 (3,9) | Hard Seat | T | 19 (16,3) | Teflon Seat | | |
| J | 4.5 (3,9) | Teflon Seat | U | 19 (16,3) | Jorlon Seat | | |
| K | 4.5 (3,9) | Jorlon Seat | V | 28 (24,1) | Hard Seat | | |
| L | 5.5 (4,7) | Hard Seat | W | 28 (24,1) | Teflon Seat | | |
| M | 5.5 (4,7) | Teflon Seat | X | 28 (24,1) | Jorlon Seat | | |

| 5 & 6 | | O-Ring/Diaphragm | |
|-------|--|------------------|---|
| | | | Cv 0.5 thru 3.0 |
| BS | | | Buna/SST Dia. |
| EL | | | EPDM/EPDM Dia. |
| ES | | | EPDM/SST Dia. |
| SS | | | Silicone/SST Dia. |
| TL | | | Teflon Encap. Silicone/SST Dia. (1-1/2" - 3") |
| TG | | | Teflon Encap. Viton/Jorlon Dia. |
| TE | | | Teflon Encap. Viton/SST Dia. |
| VS | | | Viton/SST Dia. |
| ZZ | | | Non-standard |

| 5 & 6 | | O-Ring/Diaphragm | |
|-------|--|------------------|----------------------------------|
| | | | Cv > 3.0 |
| BU | | | Buna/SST Dia. |
| EE | | | EPDM/EPDM Dia. |
| EP | | | EPDM/SST Dia. |
| SL | | | Silicone/SST Dia. |
| TS | | | Teflon Encap. Silicone/SST Dia.* |
| TY | | | Teflon Encap. Viton/Jorlon Dia. |
| TV | | | Teflon Encap. Viton/SST Dia. |
| VT | | | Viton/SST Dia. |
| ZZ | | | Non-standard |

* See note on Page 2

| 7 | | Adjusting Screw Finish (Except Threads) | |
|---|--|---|-----------------------------|
| A | | | Electro-polished (Standard) |
| B | | | 20Ra (SFV5) |
| C | | | 8Ra |

| 8 | | Range PSI (Bar) | |
|---|--|-----------------|------------------------------------|
| A | | | 3 - 8 (0,2 - 0,6)* |
| B | | | 3 - 25 (0,3 - 1,7)* |
| D | | | 5 - 30 (0,3 - 2,1) |
| E | | | 10 - 25 (0,7 - 1,7) |
| F | | | 5 - 25 (0,3 - 1,7)/Elas. Diaphragm |
| P | | | 15 - 25 (1,0 - 1,7) |
| G | | | 15 - 40 (1,0 - 2,8) |
| H | | | 15 - 50 (1,0 - 3,4) |
| J | | | 15 - 60 (1,0 - 4,1) |
| K | | | 35 - 85 (2,4 - 5,9) |
| L | | | 35 - 90 (2,4 - 6,2) |
| Q | | | 50 - 105 (3,4 - 7,2) |

* Must use EPDM or Ultra-thin Jorlon diaphragm

| 9 & 10 | | Diaphragm | |
|--------|--|-----------|----------------------------------|
| 6L | | | SST (all exterior) |
| EP | | | EPDM (all exterior) |
| JL | | | Jorlon (all exterior) |
| UJ | | | Ultra-thin Jorlon (all exterior) |

| 11 & 12 | | Actuator Finish/Type | |
|---------|--|----------------------|------------------------------|
| AA | | | Standard |
| BA | | | 20Ra (SFV5) exterior |
| CA | | | 8Ra exterior |
| DA | | | Electro-polished for 2" & 3" |

| 13 & 14 | | PED Compliance | |
|---------|--|----------------|-------------------|
| 00 | | | Not Required |
| 0G | | | SEP/PED Compliant |